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COMPLETE SPECIFICATION

Improvements in or relating to Refrigerator Cabinets

We, THE COOLERATOR COMPANY, a corporation organised under the laws of the State of Minnesota, United States of America, of City of Duluth, State of Minnesota, United States of America, (Assignees of CARL E. H. FRYKDAHL), do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to cabinet construction and more particularly to structure for closing the opening between inner and outer shells in cabinets, such as refrigerator cabinets.

A primary object of the invention is to enable the opening between inner and outer shells in refrigerator cabinets and the like, to be sealed in a novel and expeditious manner.

A further object is to enable a trim member or breaker strip, to be extended between the edges of aligned openings in the inner and outer shells of a refrigerator cabinet and the like, and to construct and arrange the trim member and the shells in a novel and expeditious manner whereby: the trim member may be quickly and easily mounted in operative position, and removed from operative position on the shells, and when the trim member is mounted in operative position on the shells, it is firmly held thereon in a positive manner, and affords an effective seal against leakage, or escape of insulation from between the shells of the cabinet.

The present invention provides a breaker strip for refrigerator cabinets and the like, the breaker strip comprising an elongated wall portion having two oppositely disposed lateral edges, each of the edges being bifurcated and having two laterally spaced tongues, one tongue on one of the edges having a portion projecting inwardly toward the other of said tongues on the one edge and terminating in spaced relation thereto, and one tongue

on the other of the edges having an edge portion flaring outwardly away from the other tongue on the other edge.

The present invention also provides a cabinet including spaced inner and outer shells, the shells having corresponding peripheral edge portions disposed in spaced relation to each other, the peripheral edge portion on one of the shells being reversely bent to afford a laterally projecting flange, and having a breaker strip as set forth above comprising a strip of flexible material having surfaces extending bilaterally from a line of flexure and in directions toward respective ones of the peripheral edges, the opposite edges of longitudinally extending lateral sides of the strip being bifurcated to engage opposite sides of the respective ones of the peripheral edges and hold the strip in bridging relation between the peripheral edges, one of the bifurcated edges having an inwardly projecting portion engaging the respective peripheral edge inwardly of the flange and in latching engagement with the flange.

Other features of the present invention will be apparent from the following description and the accompanying drawings which, by way of illustration, show a preferred embodiment of the present invention and the principle thereof and what we now consider to be the best mode in which we have contemplated applying that principle. Other embodiments of the invention embodying the same or equivalent principle may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention.

In the accompanying drawings:—

Fig. 1 is a front elevational view of a refrigerator cabinet, with door removed, embodying the principle of the present invention;

Fig. 2 is a detail sectional view taken substantially along the line 2—2 in Fig. 1;

Fig. 3 is a detail sectional view taken

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substantially along the line 3—3 in Fig. 2;

Fig. 4 is a detail sectional view somewhat similar to Fig. 2, but with certain parts eliminated therefrom for the sake of clarity and with the parts shown disposed in a different position; and

Figs. 5 and 6 are detail sectional views similar to Fig. 4 but showing the parts thereof in still different positions.

A cabinet 10 shown in the accompanying drawings to illustrate a preferred embodiment of the invention, comprises an inner casing or shell 12 mounted in an outer casing or shell 14 in spaced relation thereto. Figs. 1 and 2, the shells being formed of suitable material such as sheet metal or the like. An opening 15 is provided in the upper portion of the front of the cabinet to permit access to the interior of the inner shell 12, and this opening may be normally closed by a door, not shown.

The lower end portion 14a of the outer shell 14 extends downwardly from the opening 15 and affords a stand which may be mounted on a suitable base, not shown, to support the cabinet in such a manner that the side walls 16 and 17, the rear wall 18 and the front wall 19 are disposed vertically and the top wall 21 is disposed horizontally.

The outer shell 14 has a relatively narrow front wall portion 23 projecting inwardly from the side walls 16 and 17, the top wall 21 and the front wall 17, in substantially parallel relation to the rear wall 18, outwardly of the inner shell 12, to afford a peripheral edge defining the opening 15. The front wall portion 23 of the outer shell 14 terminates in a reversely bent flange 25, the reverse bend on the flange 25 being preferably made inwardly as shown in Fig. 2.

The side walls and top walls of the inner shell 12 correspond to the side walls 16 and 17 and the top wall 21, respectively, of the outer shell 14, and each terminates in an outwardly off-set flange 28. Fig. 2, which is disposed in substantially parallel relation to the respective wall of which it forms a terminal edge. As is best seen in Fig. 2, the respective, corresponding off-set flanges 28 and reversely bent flanges 25 are disposed in spaced relation to each other and substantially perpendicular to each other, with the leading edge of each off-set flange 28 disposed inwardly and rearwardly of the leading edge of the respective flange 25. The bottom wall 27 of the inner shell 12, Fig. 2, also embodies a similarly formed and disposed flange 28, which is similarly disposed relative to the flange 25 on a flange 28 on the upper edge portion of the lower

front wall of the lower end portion of the outer shell 14.

The inner shell 12 may be supported from the outer shell 14 by suitable means such as the hangers 30, Figs. 1 and 2, which comprise bracket members 32 and 33, connected to the outer shell 14 and the inner shell 12, respectively, by suitable means as welding and releasably held together by a bolt 34, a suitable spacer block 36 being mounted between the bracket members 32 and 33. It will be noted that in supporting the inner shell 12 from the outer shell 14, the hanger 30 or other supporting means, and the novel trim strip member or breaker strip 35 are so disposed relative to each other that the breaker strip 35 may be readily mounted on the flanges 28 and 25, as will be discussed in greater detail presently.

From the foregoing, it will be seen that in a cabinet such as the refrigerator cabinet 10, shown in the accompanying drawings, and embodying the invention, the inner shell of the cabinet is supported from the outer shell thereof by suitable means such as the hangers 30, Fig. 2, and the inner shell and the outer shell have peripheral edge portions terminating in suitable edges such as the flanges 25 and 28, the peripheral edge portions of the flanges 25 and 28 of the two shells 14 and 12 cooperating to define the opening 15 through which access may be had to the interior of the inner shell 12 and therefore, of the cabinet.

In refrigerator cabinets constructed in accordance with the present invention, it is normally desirable to dispose insulating material, such as, for example, rock-wool, or the like, between the corresponding walls of the inner and outer shell, the space between the inner and outer shells normally being filled with such insulating material. In practice, the insulating material may be in the form of relatively large masses or mats or fibrous material, or in the form of relatively finely divided material, which is preferably blown into the space between the inner and outer shells. Therefore, it will be seen that it is desirable that the opening in the front of the cabinet 10 between the flange 25 and the flange 28 be suitably closed so that not only will a pleasing appearance be afforded at the front of the cabinet 10, but also, the insulating material will be efficiently retained in the space between the inner shell 12 and the outer shell 14. For this purpose, we have afforded a novel and improved trim member or breaker strip 35 which presents not only a desirable ornamental appearance, but, also, may be quickly and easily installed on, and removed from, the inner and outer

shells 12 and 14, and, when disposed in operative position on the inner and outer shells 12 and 14, affords an efficient closure between the flanges 28 and 25 which is effective to efficiently retain either fibrous or finely divided insulating material in position between the inner and outer shells.

The trim members or breaker strips 35 comprise elongated strips which may be made of extruded plastic or the like, and each comprises an elongated bi-lateral central portion or body portion 37 having two bifurcated, outwardly opening, longitudinally extending lateral edges 40 and 41, Figs. 2 and 4-6, the body portion 37 being angularly formed to dispose the lateral edge portions 40 and 41 substantially perpendicularly to each other.

The bifurcated edge portions 40 and 41 of the breaker strips 35, Fig. 4, each comprises two tongues 40a and 40b and 41a and 41b, respectively, the tongues 40a and 41a preferably comprising substantially straight-line prolongations of the body portion 37 and the tongues 40b and 41b being disposed laterally inwardly of the tongues 40a and 41a, respectively, relative to the angle between the edges 40 and 41.

The tongue 41b is connected at its inner edge portion to the tongue 41a in inwardly spaced relation to the free end portion of the tongue 41a, and projects outwardly adjacent to, but in spaced relation to, the tongue 41a and terminates short of the free edge portion of the tongue 41a in a free edge portion 44, which projects or flares away from the tongue 41a at an acute angle. Thus, it will be seen that as shown in Fig. 4, the tongues 41a and 41b define a substantially Y-shaped bifurcated edge 41 on the breaker strip 35.

The tongue 40b is substantially L-shaped in cross-section having one leg 46 projecting substantially perpendicularly inwardly from the tongue 40a in spaced relation to the free end portion 47 of the tongue 40a and having the other leg 48 thereof projecting forwardly along the tongue 40a in spaced relation thereto and terminating in a free end portion 49. The tongues 40a and 40b are preferably substantially of the same length and, as best shown in Fig. 4, the free end portions 47 and 49 project inwardly substantially directly toward each other. Also as is best seen in Fig. 4, it will be seen that the tongue 40b is not truly L-shaped, the leg 48 preferably being disposed at an acute angle to the leg 46, so that from the junction of the leg 48 and the leg 46, the leg 48 slants somewhat inwardly toward the tongue 40a, for a purpose

which will be discussed in greater detail presently.

As will be discussed in greater detail hereinafter, the bifurcated edge 40 of the breaker strip 35 is, in the construction of the cabinet 10, disposed on the front wall portion 23 of the casing 14 in engagement with the flange 25 with the free edge 49 on the tongue 40b disposed behind, and in abutting relation with the free edge 25a of the reverse bend of the flange 25 to thereby firmly but releasably latch the bifurcated edge 40 of the trim strip 35 in operative position on the peripheral edge portion of the outer casing 14. For this purpose, the tongues 40a and 40b are preferably so constructed that the free edge portions 47 and 49 are normally slightly spaced from each other, before the breaker strip 35 is mounted on the flange 25 so that insertion of the flange 25 may be readily accomplished by pressing the bifurcated edge 40 against the rounded edge of the flange 25. However, the space between the free edge portions 47 and 49 of the tongues 40a and 40b is only sufficient to assist in guiding the flange 25 therebetween, and the free edge portions 47 and 49 are disposed sufficiently close to each other that to insert the flange 25 therebetween the tongues 40a and 40b must be sprung outwardly from each other and when the free edge portion 49 of the tongue 40b moves inwardly of, or behind the free edge 25a of the flange 25, the tongue 40b springs inwardly toward the tongue 40a to thereby dispose the free edge 49 in latching engagement with the free edge 25a, and yieldingly clamp the flange 25 between the free edge 47 of the tongue 40a and the inner face of the leg 48 of the tongue 40b.

In the construction of a refrigerator such as the refrigerator 10, the inner shell 12 is first mounted in the outer shell 14 and secured thereto by suitable means such as the hangers 30, and, thereafter, the trim strips 35 may be mounted on the corresponding perpendicularly disposed peripheral edges of the inner shell 12 and the outer shell 14. To accomplish this, individual breaker strips 35 are mounted on the top, bottom, and two sides of the opening 15 in the cabinet 10, with each breaker strip being first mounted on the respective flange 25 and then moved into operative engagement with the corresponding flange 28. Thus, it will be seen that in mounting any one of the breaker strips 35 in position on the cabinet 10, the bifurcated end 40 is first pressed onto the flange 25 on the outer shell 14 into the position shown in Fig. 4, wherein the free edge portion 49 of the tongue 40b is disposed inwardly of the free edge 25a of

the reverse bend of the flange 25, in abutting relation thereto and the free edge portion 47 of the tongue 40a, and the inner face of the leg 48 of the tongue 40b are disposed in clamping engagement with the flange 25. With the breaker strip 35 disposed in this position, it will be seen that the free edge 44 of the tongue 41b is disposed in abutting relation with the inner face of the corresponding off-set flange 28 so that the bifurcated edge 41 is sprung outwardly somewhat from the normal position assumed when the breaker strip 35 is not disposed on a cabinet. To accommodate supporting members such as the hangers 30, suitable notches or recesses 41c may be cut or otherwise formed in the tongue 41b of the bifurcated edge 41 of the breaker strip 35 in position to receive the bracket member 33 of the hanger 30 therein, as shown in Fig. 3. The other bracket member 32 of the hanger 30 is spaced from reversely bent flanges 25 to thereby afford clearance between the bracket member 32 and the bifurcated edge 40 of the breaker strip 35.

After the entire length of the edge 40 of the strip 35 has been mounted on the flange 25 in the position shown in Fig. 4, the other edge portion 41 may be moved into the position shown in Fig. 5 wherein the free edge of the flange 28 rests on the free edge 44 of the bifurcated edge 41 of the breaker strip 35. This latter movement of the free edge 41 may be readily effected in the novel breaker strip by pressing or pulling the free edge 41 and 40b to thereby pivot the bifurcated edge 40 on the flange 25 from the position shown in Fig. 4 to that shown in Fig. 5, and spring the edge 41 inwardly around the line of flexure comprising the apex of the angle between the edges 40 and 41. It will be seen that the tapered channel-shape of the bifurcated edge 40 is especially well suited for the pivotal movement of the strip 35 on the flange 25, the clearance afforded between the inner end portion of the leg 48 and the flange 25 enabling such movement to be relatively easily effected, and the latching engagement of the free edge portion 49 of the tongue 40b with the flange 25 insuring that the edge 40 will be retained in operative position on the flange 25.

Following the engagement of the free edge 44 of the bifurcated edge 41 with the free edge of the flange 28 in the position shown in Fig. 5, the breaker strip 35 may be quickly and easily disposed in normal operable position on the flanges 25 and 28 by merely pressing inwardly thereon, the pressure preferably being applied substantially on the apex of the angle

between the edges 40 and 41 along a path substantially bisecting that angle. When the breaker strip 35 is disposed in normal operable position on the flanges 25 and 28, it is disposed in the position shown in Figs. 2 and 6, wherein the bifurcated edge 41 is sprung somewhat inwardly toward the edge 40 from the normal position assumed thereby when the strip 35 is not mounted on the flanges 25 and 28, and wherein the flange 25 is clampingly engaged between the tongues 40a and 40b, with the free edge 49 of the tongue 40b disposed in latching engagement with the free edge 25a of the reverse bend of the flange 25, and the tongue 41b is yieldingly, but firmly pressing against the outer face of the flange 28 to thereby effect an efficient seal between the flange 28 and the edge 41, and yieldingly hold the free edge 49 of the tongue 40b in sealing engagement with the free edge 25a of the reverse bend of the flange 25. Hence, it will be seen that the breaker strip 35 may be readily installed in operative position on the flanges 25 and 28, and, when so installed affords a pleasing appearing trim strip which is effective to efficiently close the opening between the flanges 25 and 28 and to prevent the escape of insulation material there-through.

Removal of the trim strip 35 from the flanges 25 and 28 may be readily effected by pulling the edge 41 out of engagement with the flange 28 and then pulling the edge 40 out of engagement with the flange 25.

The breaker strips 35 at the top, bottom, and sides, respectively, of the opening 15 in the cabinet 10 are individual strips and terminate adjacent to the breaker strips 35 disposed adjacent to both ends thereof. The corners, between the adjacent breaker strips 35 are filled with preformed sections 52 which are secured in position relative to the strips by suitable means such as screws 53, and give the molding a pleasing appearance.

It will be apparent from the foregoing that we have afforded: a novel cabinet construction embodying parts constituted and arranged in a novel and expeditious manner to afford a pleasing appearance; a construction which may be quickly and easily assembled and disassembled; and a construction which, when assembled, is operable in a practical and efficient manner to retain insulation material therein.

What we claim is:—

1. A breaker strip for refrigerator cabinets and the like, said breaker strip comprising an elongated wall portion having two oppositely disposed lateral

edges, each of the edges being bifurcated and having two laterally spaced tongues, one tongue on one of said edges having a portion projecting inwardly toward the other of said tongues on said one edge and terminating in spaced relation thereto, and one tongue on the other of said edges having an edge portion flaring outwardly away from the other tongue on said other edge.

2. A breaker strip according to claim 1, for removably bridging the space between angularly disposed corresponding peripheral edge portions of inner and outer shells of a refrigerator cabinet and the like, wherein said lateral edges of the breaker strip are disposed at an angle to each other corresponding to the angle of said peripheral edges of such a cabinet to each other, one tongue on one of said lateral edges having a free edge portion projecting inwardly toward the other of said tongues on said one lateral edge for holdingly engaging one of said peripheral edges on a respective one of said shells, and one of said tongues on the other of said lateral edges having a free edge portion flaring outwardly away from the other of said tongues on said other lateral edge for guiding said peripheral edge on the other of said shells into said other bifurcated lateral edge after said one tongue on said one lateral edge is holdingly engaged with said one peripheral edge on said one shell.

3. A breaker strip according to claim 2, wherein one of the peripheral edge portions of said cabinet has a reversely bent flange formed thereon, said elongated wall portion of the breaker strip is laterally bent at an angle for bridging the space between said angularly disposed peripheral edge portions of said shells, said wall portion having two lateral edges, the tongues on one of said lateral edges have said free edge portions projecting inwardly toward each other for clampingly engaging said reversely bent flange on said one peripheral edge of said cabinet, and one tongue on the other of said lateral edges has said free edge portion flaring outwardly at an acute angle away from the other tongue on said last mentioned lateral edge and inwardly relative to the angle between said two lateral edges to afford a guide member for guiding said peripheral edge portion of the other of said shells into said bifurcation in said other lateral edge after said inwardly projecting portions of said first two mentioned tongues are clampingly engaged with said flange on said one shell.

4. A cabinet including spaced inner and outer shells, said shells having corre-

sponding peripheral edge portions disposed in spaced relation to each other, said peripheral edge portion on one of said shells being reversely bent to afford a laterally projecting flange, and having a breaker strip as set forth in claim 1 comprising a strip of flexible material having surfaces extending bilaterally from a line of flexure and in directions toward respective ones of said peripheral edges, the opposite edges of longitudinally extending lateral sides of said strip being bifurcated to engage opposite sides of said respective ones of said peripheral edges and hold said strip in bridging relation between said peripheral edges, one of said bifurcated edges having an inwardly projecting portion engaging said respective peripheral edge inwardly of said flange and in latching engagement with said flange.

5. A cabinet according to claim 4, wherein the other of said bifurcated edges has an outwardly flaring portion for guidingly engaging the other of said respective peripheral edges to thereby guide said other respective peripheral edge into said other bifurcated edge after said one bifurcated edge is disposed on said first mentioned respective peripheral edge in said latching engagement with said flange.

6. A refrigerator cabinet including an inner and an outer shell, said inner and outer shells having corresponding peripheral edge portions disposed at an angle and in spaced relation to each other, one of said peripheral edge portions having a reversely bent flange thereon, and having the breaker strip as set forth in claim 1, said breaker strip bridging the space between said corresponding peripheral edge portions, said breaker strip comprising a flexible elongated wall portion having two oppositely disposed longitudinally extending lateral edge portions disposed at an angle to each other, each of said lateral edges having two tongues disposed laterally from each other to define an outwardly opening bifurcation, the tongues on one of said lateral edges having free edge portions projecting inwardly toward each other into clamping engagement with said one peripheral edge portion inwardly of said reversely bent flange, one of said free edge portions abutting said flange, and one tongue on the other of said lateral edges flaring outwardly from the other tongue on said last mentioned lateral edge and toward the inside of said angle between said lateral edges for guiding the other of said peripheral edges into said bifurcation on said other lateral edge.

7. A refrigerating cabinet constructed

substantially as herein described with reference to Figures 1 to 6 of the accompanying drawings.

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